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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,217	09/30/2003	Atsushi Kurokawa	XA-9801B	1599

181 7590 02/24/2005

MILES & STOCKBRIDGE PC
1751 PINNACLE DRIVE
SUITE 500
MCLEAN, VA 22102-3833

EXAMINER

CHAUDHARI, CHANDRA P

ART UNIT	PAPER NUMBER
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2829

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

CT

Office Action Summary	Application No. 10/673,217	Applicant(s) KUROKAWA ET AL.	
	Examiner Chandra Chaudhari	Art Unit 2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-41 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 28-41 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 10/347,806.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9-30-03</u> . | 6) <input type="checkbox"/> Other: ____ |

Figures 23(a), 23(b), 24, 25, and 26 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim 40 is objected to because of the following informalities:

In step (h), the phrase "after the step (d)" should be "after the step (g)". Appropriate correction is required.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 28-31 are rejected under 35 U.S.C. 102(b) as being anticipated by
Chau – US 5,512,496.

Chau (Figs. 6A-6D and text in col. 4, line 42 to col. 5, line 61) discloses the claimed invention by manufacturing a heterojunction bipolar transistor with mesa shaped base layer formed by wet

etching after the base electrode is formed. The mesa shaped base and emitter layers are comprised of GaAs and the base electrode is comprised of Au.

Claims 28-31, 33, 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Hamm - US 6,294,018.

Hamm (Figs. 1-13 and text in col. 5, line 29 to col. 7, line 67) discloses the claimed invention by manufacturing a heterojunction bipolar transistor by forming a mesa shaped base layer 14 by wet etching after forming base electrode 21. The base and mesa shaped emitter layers are comprised of GaAs, and the base electrode of Au.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chau and Prasad - US 5,268,315.

Chau is applied as above and does not disclose to include a Schottky diode and a resistance element. Prasad (Figs. 1-11 and text in col. 4, line 31 to col. 7, line 7) teaches to form a heterojunction

bipolar transistor, which includes a Schottky diode and a resistance element. Note that Chau at col. 8, lines 45-48 states that other components may be included on the substrate.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a heterojunction bipolar transistor including a Schottky diode and a resistance element as taught by Prasad in Chau's process to accurately control the device resistance.

Claims 32, 34-39, 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamm and Prasad.

Hamm is applied as above and does not disclose to include a Schottky diode and a resistance element nor forming the collector electrode over the first semiconductor layer. Prasad (Figs. 1-11 and text in col. 4, line 31 to col. 7, line 7) teaches to form a heterojunction bipolar transistor, which includes a Schottky diode and a resistance element as well as to form the collector electrode over the first semiconductor layer outside the mesa shaped base layer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a heterojunction bipolar transistor including a Schottky diode and a resistance element as taught by Prasad in Hamm's process to accurately control the device resistance and form the collector electrode over the first semiconductor layer for increased isolation and good step coverage of the dielectric and metallization layers.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chandra Chaudhari whose telephone number is 571-272-1688. The examiner can normally be reached on Mon - Fri (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on 571-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chandra Chaudhari

Primary Examiner

Art Unit 2829



Chandra Chaudhari

February 18, 2005